Claims:

1. Method for assembling insulating glass panes that are filled with a gas different from air, by
- arranging a first glass sheet (24) and a second glass sheet (25), provided with a spacer (27), in a vertical or inclined position so that they are positioned one opposite to the other, without the first glass sheet (24) being in contact with the spacer (27),
- forming a chamber that encloses the space between the glass sheets (24, 25), by providing a belt (40a) at the lower edge of the glass sheet arrangement and at least one seal (52, 54) beside each of the upright edges of the glass sheet arrangement, which seal extends from a point above the belt (40a) down to the belt (40a),
- introducing a gas different from air into the chamber from below and closing the insulating glass pane by approaching the glass sheets (24, 25) one to the other once a desired filling grade or filling level has been reached,

characterized in that one of the two glass sheets (24, 25) is held at a spacing from the belt (40a) during introduction of the gas different from air and that
the gas different from air is introduced into the chamber through a gap between the belt (40a) and the lower edge of said one glass sheet (24) while the latter is kept in spaced arrangement.

2. The method as defined in Claim 1, **characterized in that** the belt (40a) is used as a conveying element of the horizontal conveyor (40).

3. The method as defined in Claim 2, **characterized in that** the method is carried out between two plates (1a, 2a), which can be varied with respect to their spacing one from the other, in a vertical gas-filling and assembly device for insulating glass panes, where the horizontal conveyor (40), using the belt (40a) as a conveyor element, is arranged in the neighborhood of the lower edge of the plates (1a, 2a),

that the glass sheets (24, 25) are conveyed into the space between the plates (1a, 2a), standing on the belt (40a) in upright position and leaning against one of the plates (1a, 2a),
that the glass sheets (24, 25) are arranged one opposite the other between the two plates (1a, 2a),
that the chamber is delimited by the glass sheets (24, 25), the plates (1a, 2a), the belt (40a) and at least two movable seals (52, 54), which latter are spaced one from the other in the conveying direction, by providing at least one of the seals (54) before the glass sheet arrangement (24, 25) and at least one of the seals (52) behind the glass sheet arrangement (24, 25), and
that a gap is formed between the belt (40a) and the lower edge of one of the two glass sheets (24) before the gas different from air is supplied.

4. The method as defined in Claim 3, **characterized in that** the spacing between the lower edge of said one glass sheet (24) and the belt (40a) is formed by lifting said glass sheet (24) off the belt (40a).

5. The method as defined in Claim 1, **characterized in that** the spacing between the lower edge of said one glass sheet (24) and the belt (40a) is formed by pivoting the belt (40a) away from the lower edge of said one glass sheet (24).

6. The method as defined in any of the preceding claims, **characterized in that** the glass sheets (24, 25) are arranged in registration and one opposite the other.

7. The method as defined in any of the preceding claims, **characterized in that** the glass sheets (24, 25) are arranged in parallel one to the other before the gas different from air is supplied.

8. The method as defined in any of the preceding claims, **characterized in that** the first glass sheet (24) is lifted off the belt (40a).

9. The method as defined in any of Claims 3 to 8, **characterized in that** both glass sheets (24, 25) are in surface contact with the plates (1a, 2a).

10. The method as defined in any of Claims 3 to 9, **characterized in that** the gas different from air is supplied through that plate (2a) on which the first glass sheet (24) is positioned.

11. The method as defined in Claim 10, **characterized in that** the gas exits through the bottom of that plate (2a).

12. The method as defined in Claim 10 or Claim 11, **characterized in that** the spacer (27) is initially attached to the second glass sheet (25).

13. The method as defined in any of Claims 3 to 12, **characterized in that** only one of the plates (2a) is movable and the gas different from air is supplied through the movable plate (2a).

14. The method as defined in any of Claims 3 to 13, **characterized in that** the plates (1a, 2a) are arranged in inclined position relative to the belt (40a).

15. The method as defined in Claim 14, **characterized in that** the upper run of the belt (40a) is provided in horizontal arrangement transverse to the conveying direction.

16. The method as defined in any of Claims 3 to 15, **characterized in that**, for arranging the glass sheets (24, 25) between the plates (1a, 2a), the upper run of the belt (40a) is initially positioned at a right angle or nearly at a right angle relative to the two plates (1a, 2a), and is then pivoted, before the gas different from air is supplied, at an acute angle in downward direction about an axis extending in parallel to the conveying direction.

17. The method as defined in any of Claims 3 to 16, **characterized in that** the plates (1a, 2a) are initially arranged in V form, whereafter the first and the second glass sheet (24, 25) are conveyed into the space between the plates (1a, 2a) in V arrangement, and are positioned in V form and held on the plates (1a, 2a) one opposite the other,
that thereafter one of the plates (2a) is approached to the other plate (1a) by pivoting it about an axis (10) parallel to the conveying direction, the position of the axis being selected in such a way that the glass sheet (24) retained on the plate (2a) to be pivoted is lifted off the belt (40a).

18. The method as defined in Claim 17, **characterized in that** the plate (2a) is pivoted until it occupies a parallel position relative to the opposite plate (1a).

19. The method as defined in Claim 17 or Claim 18, **characterized in that** the pivoting plate (2a) is additionally displaced in parallel and vertically to itself.

20. The method as defined in Claim 19, **characterized in that** the pivoting plate (2a) is displaced in parallel to itself only after having been pivoted into a position parallel to the opposite plate (1a).

21. The method as defined in any of Claims 17 to 20, **characterized in that** the position of the axis (10), about which the one plate (2a) is pivoted, is selected in such a way that it preferably comes to lie below, instead of above, the upper run of the belt (40a).

22. The method as defined in any of Claims 17 to 21, **characterized in that** in their in initial position in V form of the plates (1a, 2a) the upper run of the belt (40a) is arranged, relative to the plates, so that it encloses with both plates (1a, 2a) an angle greater than 90°.

23. The method as defined in Claim 22, **characterized in that** in its initial position in V form the upper run of the belt (40a) encloses with the two plates (1a, 2a) angles of equal size.

24. The method as defined in Claim 23, **characterized in that** the angle is selected to be between 95° and 100°, especially 96°.

25. The method as defined in any of Claims 3 to 24, **characterized in that** two or more than two glass sheet pairs are arranged between the plates (1a, 2a) at equal distance one behind the other and are simultaneously filled with the gas different from air and joined to form insulating glass panes.

26. The method as defined in Claim 25 and any of Claims 17 to 24, **characterized in that** the two or more than two glass sheet pairs are arranged in V form and in pairs one opposite the other already outside of the space defined by the plates (1a, 2a), and are transferred into the space between the plates (1a, 2a) in that arrangement.

27. The method as defined in Claim 26, **characterized in that** the two or more than two pairs of glass sheets (24, 25) are transferred into the space between the plates (1a, 2a) simultaneously.

28. The method as defined in any of Claims 2 to 27, **characterized in that** the upper run of the belt (40a) is supported over its length.

29. Device for assembling insulating glass panes that are filled with a gas different from air,
comprising two plates (1a, 2a) that can be varied with respect to their relative spacing,

comprising a horizontal conveyor, which uses a belt (40a) as a conveying element, arranged near the lower edge of the plates (1a, 2a),
comprising at least two seals (52, 54) which extend from the upper run of the belt (40a) to a point located above the belt (40a) and which are spaced one from the other in the conveying direction of the belt (40a), at least one of the seals (52) being active between the two plates (1a, 2a)
and at least one of the plates (1a, 2a) being provided with means for holding a glass sheet (24) on the plate (2a),
characterized in that the at least one plate (2a) and the belt (40a) can be moved one relative to the other in such a way that the lower edge of a glass sheet (24), being held on the plate (2a), can be brought into a position spaced from the belt (40a) and that means are provided for supplying the gas different from air through the gap between the belt (40a) and the lower edge of the glass sheet (24) held in the spaced position.

30. The device as defined in Claim 29, **characterized in that** the belt (40a) is capable of being pivoted about an axis parallel to its conveying direction.

31. The device as defined in Claim 29, **characterized in that** the plate (2a), by means of which the spacing of the first glass sheet (24) from the belt (40a) can be established, can be moved relative to the other plate (1a) and that the first glass sheet (24) can be lifted off the belt (40a) by the movable plate (2a) on which it is retained.

32. The device as defined in any of Claims 29 to 31, **characterized in that** the means for supplying the gas different from air are provided on or in one of the plates (2a).

33. The device as defined in Claim 32, **characterized in that** the gas different from air can be supplied through that movable plate (2a) on which the first glass sheet (24) is arranged.

34. The device as defined in Claim 32 or Claim 33, **characterized in that** one or more exit openings for the gas are provided at the bottom surface of that plate (2a).

35. The device as defined in any of Claims 29 to 34, **characterized in that** a channel (44), extending in the conveying direction and being subdivided into separate sections, is provided for supplying the gas different from air, that the gas can be separately supplied to the sections of that channel (44) and that each section of the channel (44) communicates with an exit opening and such exit openings are located near the gap between the belt (40a) and said one glass sheet (24).

36. The device as defined in any of Claims 29 to 34, **characterized in that** a channel (44), extending in the conveying direction, is provided for supplying the gas different from air and that branch ducts, that can be shut off separately, lead from that channel to the exit openings arranged near the gap between the belt (40a) and said glass sheet (24).

37. The device as defined in any of Claims 32 to 36, **characterized in that** the exit openings for the gas are arranged between the front surface of the plate (2a) and a seal (42) provided on the bottom surface of the plate (2a) which extends in lengthwise direction and is directed against the belt (40a).

38. The device as defined in any of Claims 29 to 37, **characterized in that** a longitudinally extending seal is provided on the bottom surface of each of the plates (1a, 2a), between the two plates (1a, 2a) and the belt (40a) or a rail (59) supporting the belt.

39. The device as defined in any of Claims 29 to 38, **characterized in that** the upper run of the belt (40a) is supported by a rail (59) over its length, which rail is connected solidly and in gastight fashion with one of the plates, especially with the stationary plate (1a).

40. The device as defined in any of Claims 29 to 38, **characterized in that** the upper run of the belt (40a) is supported by a rail over its length, which rail projects laterally beyond the belt (40a) and carries on at least one side of the belt (40a) a seal which is directed against the bottom surface of a plate (1a, 2a).

41. The device as defined in any of Claims 37 to 40, **characterized in that** the seals consist of hoses (41, 42).

42. The device as defined in Claim 41, **characterized in that** the hoses (41, 42) can be inflated.

43. The device as defined in any of Claims 32 to 42, **characterized in that** the plate (2a), through which the gas different from air is supplied, comprises a slide (48) between two exit openings for independently supplying the gas different from air, which slide extends transversely to the conveying direction from the surface of the plate (2a) to a longitudinally extending seal (42) and can be displaced in downward direction toward the belt (40a).

44. The device as defined in any of Claims 29 to 43, **characterized in that** among the seals (52, 54), extending from the upper run of the belt (40a) to a point above the belt (40a), a plurality of seals are provided in spaced relationship in vertical slots of one of the plates (1a) and can be moved into contact with the opposite plate (2a) individually and independently one from the other.

45. The device as defined in Claims 43 and 44, **characterized in that** the seals (52) arranged in the slots of the one plate (1a) are positioned opposite the slides (48) provided in the opposite plate (2a).

46. The device as defined in Claim 44 or Claim 45, **characterized in that** the seals (52) arranged in the slots of the one plate (1a) are strips that can be displaced in transverse direction.

47. The device as defined in Claim 46, **characterized in that** the strips (52) carry at their lower end a brush (65) with downwardly directed bristles.

48. The device as defined in any of Claims 29 to 47, **characterized in that** among the seals, which extend in upward direction from the upper run of the belt, one seal (54) is provided on one of the ends of the two plates (1a, 2a).